ARGUMENTS/REMARKS

Claims 1 through 15 are pending in this application. Claims 16 through 19 have been added and will be pending upon entry of this amendment. Applicant respectfully submits that claims 16 through 19 do not present new matter and are fully supported by by the present specification on at least pages 3, 5, and 6.

It is noted that claims 3, 12,14 and 15 are objected to, as being dependent on a rejected base claim, but would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims.

In response, Applicant respectfully submits that upon entry of this amendment, independent claim 1, from which claims 3, 12, 14 and 15 depend, is directed to allowable subject matter. Accordingly, Applicant respectfully requests withdrawal of the Action's objection to these dependent claims.

The Action objected to claims 14 and 15 under 37 C.F.R. 1.75(c), as being in improper dependent form for failing to limit the subject matter of the claim from which they precede.

In response, claims 14 and 15 have been amended to delete reference to a plant. Accordingly, Applicant respectfully submits that claims 14 and 15 now properly depend from claim 1, and request withdrawal of the Action's rejection under 37 C.F.R. 1.75 (c).

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as failing to particularly point out the claimed invention. The Action asserts that the term "CHP" is used inconsistently and is not properly defined in the claims.

In response, the term "CHP" has been replaced with the phrase "cumene hydroperoxide". Accordingly, Applicant respectfully submits that claim 2 is now definite,

and request withdrawal of the Action's rejection under 35 U.SC. § 112, second paragraph.

Claims 4,8,10,11, and 13 stand rejected under 35 U.S.C. § 112 as failing to particularly point out the claimed invention. Specifically, the Action asserts that the term "preferably" confuses the claims because, when used in the same claim with a narrow and broad limitation, the term renders the claim indefinite.

In response, claims 4,8,10,11 and 13 have been amended to remove the term "preferably" and the phrase that followed thereafter. These phrases have been presented in new claims 15 to 19, respectively. Accordingly, Applicant points out that claims 4,8,10, and 11 are now definite, and request withdrawal of the Action's rejection under 35 U.S.C. § 112.

Claim 9 stands rejected under 35 U.S.C. § 112 as failing to particularly point out the claimed invention. Specifically, the Action asserts that the recitation of a trademark, renders the claim indefinite as it fails to properly identify the subject matter to which the claim is directed.

In response, Applicant has amended claim 9 to remove reference to a trademark, and is now directed to a sulfonic resin, with a perfluoridated chain. Support for such a resin may be found in the specification on page 5, lines 9-11. Accordingly, Applicant submits that claim 9 is now definite, and requests withdrawal of the Action's rejection under 35 U.S.C. § 112, second paragraph.

Claims 1 and 4 to 9 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,898,995 to Sanderson et al ("Sanderson"). The Action asserts that Sanderson teaches the claimed process carried out in a single reaction zone, which inherently renders step (a) and step (b) anticipated.

Claim 1 is directed to a process for the synthesis of phenol and acetone starting

from cumene hydroperoxide. The process includes the steps of: a) pretreating cumene hydroperoxide with acidic resins to eliminate inorganic cations; and b) decomposing the pretreated cumene hydroperoxide of step (a), in the presence of acidic resins, to produce phenol and acetone. Each step is performed in a different reactor.

Sanderson is directed to a method for producing phenol and acetone by decomposition of cumene hydroperoxide over heterogeneous catalysts. Specifically, Sanderson teaches a method of synthesizing phenol and acetone by reacting cumene hydroperoxide in the presence of a heteropoly acid supported on an inert support or an ion exchange resin having a sulfonic acid functionality.

As noted above claim 1, the process of the present application for producing phenol and acetone from cumene hydroperoxide ("CHP") invloves both steps (a) and (b). The present application teaches that step (a) of pretreating the CHP with acidic resins, and step (b) of causing decomposition of the CHP, must be performed in separate reactors. For example, step (a) must be performed in a pre-treating reactor, while step (b) must be performed in another, separate decomposition reactor.

In contrast, Sanderson discloses only the second step (b) of the claimed process; the decomposition step. Therefore, since the first step (a) of pretreating the CHP with acidic resins is absent, Sanderson fails to anticipate claim 1 of the present application.

Also, not only does Sanderson fail to disclose the first step (a) of the present invention, but it fails to disclose or suggest any teaching of phenol or acetone synthesis from cumene hydroperoxide that avoids the use of strong catalysts such as sulfuric acid. Such synthesis is only possible by pre-treating the CHP with acidic resin as described by applicant's step (a) of the claimed process.

It is well known in the art that cumene hydroperoxide employed as starting material should be prepared by oxidizing cumene with air in a liquid phase. The main by-products of this reaction are acetophenone, dimethylphenylcarbinol and formic acid.

In particular, the formic acid catalyses a partial decomposition of the CHP to phenol thereby causing a lower reaction yield. It is also well known in the art that in order to neutralize this formic acid by-product, aqueous solutions of sodium salts with organic acids, are introduced into the cumene mixture in order to buffer the reaction environment. Despite the fact that the reaction mixture that exits the oxidation step is washed with water to remove the salts, the CHP thus produced from this reaction is known to contain a small, yet uneliminable, percentage of inorganic cations along with a residual percentage of water.

The presence of such cations is particularly disadvantageous for performing the subsequent decomposing reaction of step (b) to yield phenol and acetone because it interferes with the functionality of the employed acidic resins. The choice of acidic catalysts, therefore, is limited to traditional inorganic acids such as sulphuric acid. However, most of these acids, such as sulfuric acid, are associated with safety problems of waste disposal. This underscores the importance of the pretreatment step (a) of the present application, which is aimed at eliminating the inorganic salts of the starting material by performing a desalinisation in a pre-treatment reactor. This pretreatment step is separate from step (b) in the decomposition reactor in which the synthesis of phenol and acetone actually takes place.

Step (a), therefore, "cleans" the starting material before the decomposition treatment step thereby avoiding the blockage of the acidic resin used in step (b). This provides an important advantage because the decomposition step (b) can be performed continuously, without the need to stop the process to clean the acidic resin. An efficient way of performing this step (a) would involve placing two or more pre-treatment reactors in parallel up stream of the decomposition reactor.

In contrast, Sanderson fails to disclose or suggest any of the above advantages associated with step (a). Therefore, Sanderson fails to anticipate claim 1 of the present application. Accordingly, Applicant respectfully submits that clam 1 and dependent claims 4 through 9 are not anticipated, and request withdrawal of the Action's rejection

under 35 U.S.C. § 102 (b).

In view of the foregoing, Applicant respectfully submits that claims 1 to 19 are patentably distinguishable over the cited reference. As such, Applicant respectfully requests reconsideration and withdrawal of all the claim rejections and passage of the application to allowance.

Respectfully submitted,

Date: December 19, 2005

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